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## On some Complicated Cases of Abdominal Section.<sup>1</sup>

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IN the autumn of 1887 I endeavoured to demonstrate that the cause of death following an abdominal section is not infrequently some obstructive condition of the bowels, and that in many cases of this kind the fatal result has been erroneously attributed to peritonitis or to septicæmia.<sup>2</sup> Further observation has confirmed me in this opinion, and I now relate the following cases in illustration of these views.

CASE I.—On August 23rd, 1888, in the absence of Mr. Knowsley Thornton, I operated, at the request of Dr. Murphy of Twickenham, on a patient from whom Mr. Thornton had removed an ovarian tumour on May 9th of the same year. The history was one of increasing difficulty with the bowels, commencing soon after the ovariectomy. When I saw the patient obstruction was complete. There was a prominent tender swelling, resonant on percussion, and fixed in the lower part of the right side of the abdomen. The finger in the vagina could just reach this swelling. The rest of the abdomen was soft and flat. The temperature was 99.2° F.; the pulse 100 and losing strength. It seemed to me probable that some adhesion resulting from the first

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<sup>1</sup> A paper read before the Harveian Society, May 7th, 1890.

<sup>2</sup> "The Condition and Management of the Intestine after Abdominal Section." *Med. Chir. Trans.*, vol. lxxi.

operation was the cause of the difficulty with the bowels. On opening the abdomen I found some inflammatory adhesions matting the parts together behind the cicatrix and in the pelvis. Two tensely distended coils of intestine lay parallel to each other and extending from the brim of the pelvis on the right side towards the right loin. I could not empty the distended gut by pressure in any direction, nor could I make out the cause of the obstruction. I therefore inserted a trocar into one of the coils, and removed a quantity of flatus and liquid fæces. It then became obvious that the obstruction was due to the presence of a neoplasm springing from the posterior abdominal wall just above the lower end of the ileum. I estimated the mass to be about the size of a Tangerine orange, and the bowel involved was evidently a portion of the jejunum close to its upper end. The nature of numerous minute points which has been noted scattered over the peritoneum was now made clear. It seemed useless to make a fistula, while, in view of the widespread character of the disease, any operation for making a communication between two portions of the gut seemed equally futile and more than likely to end in the death of the patient on the operating table. I therefore sewed up the trocar wound, and that of the abdominal wall, and in doing so discovered several other foci of new growth, from the size of a pea downwards, amongst the adhesion. The patient rallied from the immediate effects of the operation, but gradually sank and died in about thirty hours. In this case, judging by her previous convalescence, there was every reason to suppose that under favourable circumstances recovery would have taken place satisfactorily. Death within a few hours or days is, however, the invariable result of an unsuccessful attempt to relieve a complete obstruction of the bowels by abdominal section. The same unsatisfactory issue follows when a complete intestinal obstruction is produced as a consequence of an operation.

CASE 2.—On March 7th, 1887, a woman, forty-four years of age, consulted me on account of a small painful fibroid

tumour of the uterus, which, she said, she had been able to feel for twelve years. The patient was under my care for nine months. In December, the tumour had quite tripled its size when first examined. It reached as high as the umbilicus, and was apparently attached to the right cornu of the uterus by a narrow pedicle. The periods were very free. Pain was constant and increasingly severe, while the patient had grown very thin. As her condition was evidently becoming worse, and there was no possibility of alleviating it by rest, I asked Mr. Thornton to see the case with me, and, with his approval, I arranged to operate. On opening the abdomen I found that the tumour grew from the upper part of the right side of the uterus. It was completely within the right broad ligament, under the anterior peritoneal fold of which it slipped about freely. The ovary and Fallopian-tube were tightly stretched round the posterior part of the tumour, and no doubt this was the cause of the severe pain. When its peritoneal capsule was incised the growth was easily separated from the loose connective tissue around it, and brought out of the abdominal cavity, remaining firmly attached, however, to the cornu of the uterus. The ovary and tube now slipped down almost into their normal positions. Both broad ligaments were tied off with silk, and the wire of a serre-nœud was passed round the uterus and tightened without difficulty. The tumour was then cut away with the ovaries and tubes, and the wound was carefully sewn up, the wire and the cut surface of the uterus being kept outside, while the divided surfaces of the broad ligaments were left inside the peritoneal cavity.

After the operation there was little pain, and no opium was given. On the following morning there was distinct abdominal distension, which was much more marked towards evening. Flatus, which had been escaping through the rectal tube at intervals, now ceased to pass. I ordered half a drachm of sulphate of magnesia with ten grains of the carbonate every hour, and six doses were given. After this there was a very free escape of flatus from the rectum

whenever the rectal tube was inserted, till 3 o'clock next morning, and also at 9 A.M. Notwithstanding this the abdominal distension rapidly increased. On the afternoon of the second day the saline aperient was again given in repeated doses, but no more flatus escaped downwards. Towards evening vomiting commenced and soon became continuous. The temperature slowly rose to 104° F. in the the vagina, the pulse to 154, and the patient died at 4 A.M. on the third day after the operation. It was found after death that a coil of small intestine was adherent to the divided tissues of the right broad ligament. The bowel was here acutely bent. It was immensely distended above the adhesion, but completely collapsed below it. There was no other sign of disease. In this case also, when the operation was finished, there was no reason to anticipate an unfortunate result. The sequel showed that there was no deficiency of healing power; that, indeed, the rapid union between the pedicle and the intestine was the cause of the mechanical obstruction and of death. The case was treated in the belief that the unfavourable symptoms were due to some obstruction or to paralysis of the bowels. Before the post-mortem examination, however, it was confidently asserted by some that the patient had died from acute peritonitis. The case, therefore, proves that symptoms resembling those of peritonitis may be due to obstruction of the bowels. A misinterpretation of the meaning of such symptoms seems to me to be the origin of Mr. Lawson Tait's recommendation that "a rapidly acting purgative" should be administered "on the slightest indication of peritonitis after ovariectomy." If this be done, Mr. Tait asserts that "the patient's bowels are moved, and the peritonitis disappears."<sup>1</sup> In agreement with this Mr. Meredith says that "the *rationale* of the action of *saline purgatives* in the treatment of early symptoms of peritoneal mischief can, from my point of view, be explained only on the grounds of their promoting absorption through intes-

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<sup>1</sup> *Brit. Med. Jour.* 1886, vol. i., p. 921.

tinal excretion."<sup>1</sup> But neither Mr. Tait nor Mr. Meredith has shown that the symptoms removed by a saline purge are ever "early symptoms of peritoneal mischief," or in any way due to peritonitis. It seems to me that all the evidence is against this view. One frequently sees cases with complete retention of the contents of the bowel, with the abdomen becoming distended, vomiting at intervals, and showing all those symptoms which so frequently precede death from abdominal section. These unfavourable signs may entirely disappear within a few hours of the administration of a purgative, or after the action of a purgative enema. The same result may occur spontaneously, or when the patient is under the influence of sedatives. However brought about, it frequently happens that when the constipation, distension, and vomiting are relieved the temperature rises, and sometimes rises rapidly. Such a rise of temperature after an operation is one of the surest signs of an increase of inflammation. Hence if the unfavourable symptoms removed by the action of a purgative be attributed to peritonitis, we arrive at the contradictory conclusion that in many cases as the symptoms of peritonitis get better the inflammation itself increases. If, on the other hand, the bowel symptoms be due to obstructive conditions, the rise of temperature following the relief of the intestinal difficulties is evidently caused by the stretching or tearing of recent adhesions as the contents of the bowel are forced down. The fact is that in these cases, when the contents of the bowel pass downwards, peritonitis, instead of disappearing, is frequently aggravated. If the obstruction be removed this increased inflammation, being local, is temporary and harmless.

One is forced to consider whether treatment by rest and sedatives would have led to a more favourable result in the case which I have recorded. This treatment is generally recommended, and is undoubtedly the most satisfactory method of managing an intestinal obstruction, whether

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<sup>1</sup> *The Lancet*, April 19th, 1890, p. 835.



arising in connexion with an abdominal operation or from other causes. There are, however, cases in which symptoms of obstruction following an abdominal section continue and increase, in spite of the administration of sedatives. I have made a post-mortem examination in which an almost exact repetition of the condition described above was found—namely, an acute bend of the bowel, the part above the bend being distended, while the part below was collapsed. The clinical history of the case was very similar to that which I have here related, with the exception that the onset of symptoms was not so early, and death was delayed until the fifth day. This case was treated throughout by sedatives. Treatment by opium or belladonna and rest is often successful in the first few days after an operation, when flatus does not pass freely downwards, when there is slight irregular distension of the bowels, with discomfort and frequent spasmodic pain in the abdomen, but without the signs of an absolute obstruction. On the other hand, whenever one can say definitely that the intestine is unable to force down its contents, sedatives, it seems to me, are of no avail, because the treatment of an obstruction of the bowels by sedatives acts slowly, whereas a complete obstruction during convalescence from an abdominal section kills with great certainty in about three days after symptoms of the complication first show themselves. Treatment by purgatives may be equally unsuccessful, as in the case I have related. But urgent symptoms of obstruction after an abdominal section are often in great part caused by a paresis of the bowel resulting from its exposure and manipulation during operation. Hence, when symptoms of obstruction arise in these cases, it may be impossible to differentiate exactly to what extent paresis, and to what extent a mechanical difficulty, is the cause. When mechanical difficulties are the least important factors in producing symptoms of obstruction, any slight movement of a coil of intestine or of a hard mass of fæces may induce an immediate improvement. Under these circumstances sedatives, by keeping the parts quiet, may perpetuate a difficulty, and so do harm; whereas the

stimulation of a purge may give most satisfactory results. It seems to me that if adverse symptoms increase under sedative treatment, the effect of a purgative should be tried, the lower bowel being first cleared by enema: I have seen such treatment followed by the rapid disappearance of all unfavourable signs. If an improvement does not follow, the mechanical removal of the difficulty by a second operation would seem to be the only way to deal with the condition with any chance of success, although the results of second operations for the relief of obstruction of the bowels within a few days of an abdominal section are extremely discouraging. The case I have related would seem to have been a favourable one for such an attempt owing to the existence of only one small point of adhesion. I had, however, never seen symptoms due to obstruction beginning so early and progressing so rapidly. Hence I wavered in my opinion as to the cause of the patient's condition, and unfortunately did not reopen the abdomen.

CASE 3.—On March 25th, 1887, I performed ovariectomy on a young woman twenty-one years of age, who suffered from a large ovarian tumour, with consequent emaciation and debility. She was otherwise healthy, but of decidedly strumous constitution. The tumour grew from the left ovary, and no difficulty was met with in removing it. The right ovary was healthy. On the evening of the day following the operation the temperature rose to  $103^{\circ}$  in the axilla, the pulse was 120, and the patient complained of severe pain in the left side of the pelvis. Ice was applied to the head till the following morning, when the temperature had come down to  $99^{\circ}$ . The patient was now free from pain, and her condition seemed in every way satisfactory, except that the wound did not heal well superficially. The bowels were moved by enema on the sixth morning, and every second or third day afterwards by enema or by laxative medicine. With the exception of a temporary rise to  $102^{\circ}$  on the eleventh evening the temperature was not above  $99\cdot4^{\circ}$  in

the axilla till the fifteenth day after the operation, when it again rose. I then found a slight thickening of the tissues to the left of the uterus. The temperature after this was from  $100^{\circ}$  to  $102^{\circ}$  every evening. On the twenty-third day I detected a hardness of the tissues just above the inner end of the left Poupart's ligament. On internal examination a large mass was discovered filling the left side of the pelvis. There was evidently a suppurating cellulitis pushing up the peritoneum and burrowing forwards. The abdomen was poulticed, and three days later some pus burst through the lower end of the wound. The discharge was very free for some days, and then became scanty. The general condition now greatly improved. There was no pain, and the upper part of the wound healed rapidly. On the thirty-third day the patient again complained of severe pain, this time in the right side of the pelvis. An examination showed that a large very tender swelling had developed on that side also, while much indurated tissue remained on the left side, the uterus being firmly fixed between. The temperature now rose high every evening, frequently above  $104^{\circ}$  in the axilla. The patient had a severe rigor on the thirty-seventh day. There was at this time still a sinus leading three inches into the left side of the pelvis, but there was never any evidence of a second escape of pus. After ten days of severe hectic fever a slight general improvement began. Convalescence was very slow, and repeatedly interrupted by febrile exacerbations. The wound did not heal till three months after the operation, and it was a month and a half later before the uterus became at all movable. Menstruation was in abeyance from five weeks before the operation till August 17th, exactly six months. The periods were quite regular before and after that time, but were painful for a few months after their return. The patient has since continued quite well.

CASE 4.—On Dec. 27th, 1888, I removed two ovarian tumours from a woman thirty-nine years of age, a patient of Dr. Curgenvén. She was of unhealthy strumous appearance,



and had evidence of mitral contraction with very excitable heart action. The larger tumour, which weighed 20lb. had a twisted pedicle, and was very adherent to the abdominal wall and to the omentum. A considerable portion of the latter was tied off and removed. The pedicle, having been secured by silk in two pieces, the tumour was cut away. A small non-adherent tumour of the other ovary, about the size of a cocoa-nut, was also removed. In all the operations detailed above I had taken every care to prevent the access to the wounds of anything that was not absolutely clean, and also purified by carbolic solution. In this case, before closing the incision, I washed out the abdomen freely with warm water, and drained the pelvis with a glass tube. This tube was removed after seventy-two hours, there being then very little clear serum escaping from it. Flatus began to pass from the rectum on the morning of the day after the operation. At 9 A.M. on the second day the temperature had risen to  $102.4^{\circ}$  in the vagina; the pulse was 112. A menstrual flow came on, and the temperature fell a little. All day the flatus caused a good deal of pain, and there was some localised distension of the abdomen to the right of the incision. The distension and pain passed off in the night. Between midnight and 2 A.M. the temperature, which had ranged from  $101.8^{\circ}$  to  $102^{\circ}$  for twelve hours, rose suddenly to  $103^{\circ}$ . Ice was applied to the head, and kept on till the temperature had come gradually down to  $98.4^{\circ}$  on the seventh day. The wound did not heal well at its lower end, where the drainage-tube had been. The bowels were moved on the sixth day by enema. Subsequently there was occasional slight distension of the abdomen, which always passed off after an action of the bowels. The patient had not been able to pass urine except through a catheter since the operation. On the thirteenth day there was an attack of cystitis. The bladder was washed out with a weak solution of quinine, and the urine became clear and sweet after two days. At this time an unhealthy sore formed on the back, the skin of which had been tender from the fifth day. The temperature rose with these complications, and

continued to rise after all evidence of bladder irritation had gone. On the twentieth day there was marked distension and much pain in the abdomen. Both passed off after the action of a clyster, but there remained a hard sausage-shaped mass above and to the left of the umbilicus, and evidently extending deeply into the abdomen. Next day the temperature rose to  $102.8^{\circ}$ , the pulse to 124. The mass in the abdomen enlarged downwards towards the cicatrix, and on the twenty-fourth day the wound opened in its upper part, which had been completely healed for more than a fortnight. A great deal of pus was squeezed out. From its position I presume that this abscess had originated in connexion with the divided omentum. The condition of the patient, which had never been satisfactory, now completely changed; the lower end of the incision healed at once; the bed sore assumed a healthy action, and the temperature fell to normal. The mass in the abdomen slowly disappeared, and on the thirty-fourth day the wound closed. The patient has had no trouble from the bowels or bladder since she went home. She suffered much from cardiac symptoms for some months, but is now quite well.

CASE 5.—In June, 1890, a woman, thirty-one years of age, and of evidently nervous temperament, was sent to the Samaritan Free Hospital by Dr. Cooper, of Leytonstone. She was the mother of three children, and had been delivered of a stillborn child at the seventh month of gestation in 1887. Before then menstruation was normal, but she had since suffered much pain with each period. She was quite regular till April, 1890. On May 17th, being three weeks overdue, an apparently normal flow came on, and was very free for seven days. Then the patient, while engaged in scrubbing a floor, was suddenly seized with severe pain and became very faint. The pain continued, but not so severe as at first, and a hæmorrhagic discharge was more or less constant till I saw her a fortnight later. I found a rounded, elongated, fluctuating tumour, dull on percussion, rising out of the pelvis on the right side above the fold of the groin to the level of the anterior superior iliac spine. This was

not very tender except when pushed downwards or backwards. A normal uterus was easily made out high up close to the pubes, and slightly pushed over to the left side by the above mass. The whole pelvis behind was filled by an excessively tender, ill-defined swelling. Defecation was extremely painful, the bowels were very costive, and the complexion was dusky and unhealthy. An exploratory operation was performed on June 16th. I exposed and emptied a cyst growing from the right broad ligament; this being held aside, there was still a large swelling behind the uterus, almost obliterating Douglas's pouch. This proved to be a blood-clot enclosed in the left broad ligament. I ruptured its peritoneal covering and removed the clot. I was then able to bring together the two layers of the broad ligament and transfix them deep in the pelvis and close to the uterus by a double ligature. With this I tied off the greater part of the broad ligament in two pieces. The hæmorrhage had so stripped off the peritoneum from the wall of the pelvis that it was impossible to bring the outer end of the posterior layer of the broad ligament within the ligature. Some raw surface was consequently left, but there was no fresh bleeding. The pedicle on the right side was now secured, and the diseased parts, including both ovaries, were cut away. The peritoneal cavity in this case also was washed out with warm water, and a drainage-tube was inserted and fixed in the usual manner. The specimen from the left side showed much matting of the tissues, the fimbriated extremity of the tube being closed. There had been a rupture of the tube into the cavity which had contained the blood-clot. No fœtus was found. The specimen from the right side was an ordinary broad ligament cyst. The drainage-tube was removed on the second day. The highest temperature for the first eight days was 100·6° in the vagina on the evening of the day of operation. From the fifth morning the bowels were moved every second or third day by enema, many hard masses of fæces being removed. At the end of a week the patient complained of much pain and throbbing in the lower part of the back. Two

days later a large tender mass was felt behind the uterus. There was also a very tender point close to the fundus of the uterus, between it and the anterior abdominal wall. The pain here was greatly aggravated by any upward pressure on the cervix. On the twelfth day the mass in the pelvis was larger, and elongated towards the left loin. There was some abdominal distension, and always much pain before flatus passed. The wound was completely healed over, but the temperature had gradually risen since the eighth day to  $102.4^{\circ}$ . I stopped all food by the mouth, and ordered rectal feeding, with twenty minims of tincture of belladonna every six hours. Next day there was much pain, and opium was substituted for the belladonna. The bowels were repeatedly moved by enema. The abdominal distension and the mass in the pelvis both diminished, but the tenderness on touching the uterus continued. The temperature gradually fell, till on the eighteenth day it was below  $99^{\circ}$  in the vagina, the pulse being then 64, and flatus passing without pain. Rectal feeding was now discontinued. On the twentieth day the wound reopened and several drachms of pus escaped, apparently from between the uterus and the abdominal wall. After this pressure on the uterus caused no pain. The discharge soon diminished, and the temperature did not again rise above  $99^{\circ}$  in the vagina. The wound finally healed on the twenty-sixth day. The large mass behind the uterus was now quite soft and free from tenderness. It gradually became imperceptible, being evidently bowel distended by fæces.

Of these patients, the three who got well were all delicate women, and in this respect were in marked contrast with the fatal cases. Yet they recovered in spite of the occurrence of deep-seated suppuration. A study of such cases seems to show that so long as the lumen of the bowel remains open and peristalsis is effective, an inflammation in the neighbourhood of the peritoneum, or even within the peritoneal cavity, if there be no fistula, is not more dangerous than any other deep-seated inflammation of like extent. This view gives the best key to the explana-

tion of most of the recent improvements in abdominal surgery. Of these the careful attention to the emptying of the bowels before operation, and to the feeding of the patient during convalescence, the less constant use of opium, the substitution of belladonna for this drug, and the more frequent use of purgatives and purgative enemata, are all methods directed to the condition of the intestinal tract. The advantages gained by washing out the peritoneal cavity seem to me also to depend mainly on the effectual way in which this process ensures a natural disposition of the intestines and a consequent immunity from obstructive troubles, even if adhesions should take place. The advantages of this method are usually attributed to its cleansing effect. I have, however, seen clots and pieces of tissue brought out of the abdomen after very free irrigation, so that it seems to me we cannot be sure that this method removes all foreign matter. It is, moreover, absolutely certain that if the conditions be otherwise favourable the leaving of a considerable quantity of blood and aseptic discharges in the peritoneal cavity does not necessarily exercise any injurious effect on convalescence. In a case of hæmorrhage from slipping of a ligature, whose abdomen I reopened last year, I left so much clot in the abdominal cavity that there was a discharge of thick syrupy blood from the drainage-tube for six days. Although the patient was extremely debilitated and weak, there were no ill effects that could be attributed to the presence of the blood, and she got quite well. Experimental evidence also proves that sterilised organic matter free in the peritoneal cavity is not necessarily harmful. The kidney of a rabbit when inserted within the peritoneum of a living rabbit, may be absorbed apparently without difficulty.<sup>1</sup> Recently Messrs. Shattock and Ballance have shown that large pieces of cancerous tissue, if carefully preserved from septic contamination, may be completely absorbed without doing any

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<sup>1</sup> Watson Cheyne : "The Antiseptic Treatment of Wounds," p. 5, quoting Dr. H. Tillmanns of Leipsic.



harm when inserted into the peritoneal sac of an animal.<sup>1</sup> Such evidence shows that the complete removal of aseptic discharges and blood-clot, though of course desirable, is not an essential matter in abdominal surgery. Hence any superior cleansing effect obtained by washing cannot account for the advantages claimed for the method. Nor can the advantages of washing out be due altogether to the avoidance of irritation of the peritoneum. One has often seen cases recover with only the slightest constitutional disturbance after very vigorous sponging. There remains the important contrast between the two methods, that by sponging the coils of gut are almost necessarily pulled about and displaced as the sponges are passed from one portion of the abdomen to another; whereas when the abdomen is filled with a liquid the floating intestines easily and naturally settle down in a normal position as the fluid is allowed to flow out.

It seems to me that not only is the benefit derived from washing the peritoneal cavity not due to a cleansing effect, but that as a cleansing process this method is distinctly dangerous in those cases in which only aseptic matter has to be removed. There is no convenient fluid which can be trusted to be free from all dangerous germs and can at the same time be safely used to irrigate the peritoneum. Plain water is recommended, and it is stated that the presence in it of living organisms does not exercise any injurious influence.<sup>2</sup> Of course there are many living organisms found in water whose presence in a wound is harmless, as the conditions are in every respect inimical to their growth and multiplication, while their absorption is a matter of no difficulty. Such organisms are present in all running waters. But we know that there are also other organisms of various kinds whose germs are almost universally present, and which develop and multiply wherever they come in contact with dead animal matter. There is no

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<sup>1</sup> *British Medical Journal*, March 14th, 1891, p. 565.

<sup>2</sup> Lawson Tait : *British Medical Journal*, May 15th, 1886, p. 923.

doubt that many such germs may be absorbed and eliminated by healthy human tissues. Hence methods which beneficially affect the condition of the alimentary canal and of the tissues generally are also indirectly efficacious in preventing septic disease. Nevertheless, under conditions favourable to their growth, septic or sepsin-producing germs show an extraordinary fertility. Their presence may render a hospital so unhealthy that any patient operated on in it, or any woman delivered in it, is exposed to the greatest risks. There can be no doubt that the most fatal poisons may exist in air and in water without our being able to recognise the fact by our unaided senses. If air or water which is thus contaminated should gain access to the peritoneum, death from acute peritonitis will certainly follow. Other less fatal, but not altogether harmless, poisons may be introduced. In the last two cases which I have related circumscribed suppuration occurred, apparently commencing within the peritoneal cavity. This is a very rare complication. I have indeed seen no evidence that traumatic suppurative peritonitis ever occurs when antiseptic precautions have been carefully used. In each of these cases I had washed the abdomen with unprepared water, and I cannot but feel that if an aseptic or antiseptic fluid had been used the suppuration might have been avoided. The fatal case of hysterectomy above recorded is very instructive in this connexion. The operation was conducted with most careful antiseptic precautions, and though death was very rapid there was not a sign of peritonitis. Such facts yield strong evidence in favour of methods which are directed to preventing the access of germs to wounds at the same time that we use every endeavour to strengthen the tissues. We cannot tell beforehand when the absence of germs may turn the scale in favour of our patient. While believing, therefore, that the washing-out process offers distinct advantages of a kind which are apparently not recognised by the chief advocates of this treatment, it seems to me that unless we can devise some antiseptic or aseptic fluid which may be safely used, we

employ this method at an unnecessary risk. I cannot agree with my colleague, Mr. Meredith, when he says:—  
“The precaution of using previously boiled water is not essential to success, provided always that the fluid employed be free from actual septic contamination.”<sup>1</sup>  
This last clause, in my opinion, begs the whole question. We ought to strive to devise some exact scientific means of excluding every source of danger. Failing the attainment of this, we should at least boil the water carefully if we use this process. To cease to seek for some more precise method because of the publication of successful cases treated without antiseptic precautions is to neglect altogether the teachings of science, and to reduce our practice to mere empiricism. Such a course could only be justified if the empiric methods showed a markedly lower death-rate from septicæmia than the scientific methods do. This is not the case. On the contrary, not only do deaths from septicæmia occur when these empiric methods are practised, but it is within my knowledge that in experienced hands, when no antiseptics are used, death from acute peritonitis may follow a simple ovariectomy within three days. The methods which expose a patient to this risk seem to me quite unjustifiable, for such deaths are certainly preventable.

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<sup>1</sup> *The Lancet*, April 19th, 1890, p. 835.